

CLAIMS:

1. A concentration method using magnetic particles comprising:
capturing a target substance in a suspension directly or indirectly by magnetic particles;
separating the magnetic particles by exerting a magnetic field from outside of a liquid passage to the inside of the liquid passage to thereby attract the magnetic particles to an inner wall of the liquid passage, at a time of passing a suspension having a first volume and in which the magnetic particles which have captured the target substance are suspended, through the liquid passage;
re-suspending the magnetic particles which have captured the target substance in the suspension, by passing a liquid having a second volume smaller than the first volume of the suspension through the liquid passage in which the magnetic particles which have captured the target substance have been separated, in a state with the magnetic field not exerted on the liquid passage; and
eluting the target substance from the magnetic particles which have captured the target substance suspended in the liquid, and separating only the magnetic particles to obtain a suspension in which the target substance is concentrated.
2. A concentration method using magnetic particles according to claim 1 wherein;
the magnetic particles are separated by sucking the suspension from a container storing a first volume of suspension, in which the magnetic particles having directly or indirectly captured the target substance are suspended, and passing the suspension through the liquid passage, with the magnetic field exerted from outside of the liquid passage, to thereby attract the magnetic particles to the inner wall of the liquid passage; and
the magnetic particles are re-suspended by sucking and discharging a second volume of liquid to a container where the second volume of liquid is stored, the second volume being smaller than the first volume of the suspension, without exerting the magnetic field.
3. A concentration method using magnetic particles according to claim 1 wherein;
the magnetic particles are separated by sucking the suspension from a container storing a first volume of suspension in which the magnetic particles which have captured the target substance are suspended, to a storage section via a liquid suction passage, with the magnetic

field exerted from outside to said liquid suction passage and a liquid discharge passage, and discharging the suspension from said storage section via said liquid discharge passage, to thereby attract the magnetic particles to the inner wall of the liquid suction passage and the liquid discharge passage; and

the magnetic particles are re-suspended by inserting said liquid suction passage and said liquid discharge passage into a container where the second volume of liquid is stored, the second volume being smaller than the first volume of suspension and substantially the same amount as that of the storage section, to thereby suck and discharge the second volume of liquid, without exerting a magnetic field.

4. A concentration method using magnetic particles according to claim 1 wherein, in a container storing the suspension re-suspended in the re-suspension step, the magnetic particles in the suspension are separated and then re-suspended in a liquid having a third volume smaller than the second volume, by sucking and discharging the suspension, with a magnetic field exerted on the liquid passage, by means of a pipette apparatus having a liquid passage in which liquid can pass through both in the suction direction and the discharge direction of the liquid, and a storage section communicated with the passage and having a capacity smaller than the second volume, and also having magnetic force means for exerting and removing a magnetic field to and from the liquid passage from outside of the liquid passage.

5. A concentration method using magnetic particles according to claim 2 wherein, in a container storing the suspension re-suspended in the re-suspension step, the magnetic particles in the suspension are separated and then re-suspended in a liquid having a third volume smaller than the second volume, by sucking and discharging the suspension, with a magnetic field exerted on the liquid passage, by means of a pipette apparatus having a liquid passage in which liquid can pass through both in the suction direction and the discharge direction of the liquid, and a storage section communicated with the passage and having a capacity smaller than the second volume, and also having magnetic force means for exerting and removing a magnetic field to and from the liquid passage from outside of the liquid passage.

6. A concentration method using magnetic particles according to claim 3 wherein, in a container storing the suspension re-suspended in the re-suspension step, the magnetic particles in the suspension are separated and then re-suspended in a liquid having a third volume smaller than the second volume, by sucking and discharging the suspension, with a magnetic field exerted on the liquid passage, by means of a pipette apparatus having a liquid passage in which liquid can pass through both in the suction direction and the discharge direction of the liquid, and a storage section communicated with the passage and having a capacity smaller than the second volume, and also having magnetic force means for exerting and removing a magnetic field to and from the liquid passage from outside of the liquid passage.

7. A concentration method using magnetic particles according to claim 1, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via the liquid passage, and discharging the liquid to the first container via the liquid passage, with a magnetic field exerted on the liquid passage from outside.

8. A concentration method using magnetic particles according to claim 2, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via the liquid passage, and discharging the liquid to the first container via the liquid passage, with a magnetic field exerted on the liquid passage from outside.

9. A concentration method using magnetic particles according to claim 3, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via the liquid passage, and discharging the liquid to the first container via the liquid passage, with a magnetic field exerted on the liquid passage from outside.

10. A concentration method using magnetic particles according to claim 4, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via the liquid passage, and discharging the liquid to the first container via the liquid passage, with a magnetic field exerted on the liquid passage from outside.

11. A concentration method using magnetic particles according to claim 1, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via a liquid suction passage, and discharging the liquid to the first container via a liquid discharge passage, with a magnetic field exerted on the liquid suction passage and a liquid discharge passage from outside.

12. A concentration method using magnetic particles according to claim 2, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via a liquid suction passage, and discharging the liquid to the first container via a liquid discharge passage, with a magnetic field exerted on the liquid suction passage and a liquid discharge passage from outside.

13. A concentration method using magnetic particles according to claim 3, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via a liquid suction passage, and discharging the liquid to the first container via a liquid discharge passage, with a magnetic field exerted on the liquid suction passage and a liquid discharge passage from outside.

14. A concentration method using magnetic particles according to claim 4, wherein the separating of the magnetic particles comprises shifting all of the liquid stored in a second container to a first container, after having shifted all of the suspension stored in the first container to the second container, by sucking the liquid stored in the second container via a liquid suction passage, and discharging the liquid to the first container via a liquid discharge passage, with a magnetic field exerted on the liquid suction passage and a liquid discharge passage from outside.